

Sex-Linked Traits Practice 1

***Remember for sex-linked traits you write the alleles as the sex chromosome they are found on, with the allele for the trait as an exponent of the chromosome. (Ex. X^R and X^r)

1. In fruit flies, eye color is a sex linked trait on the X chromosome. Red is dominant to white. What are the sexes and eye colors of flies with the following genotypes?

Genotype	Sex of Fruit Fly	Eye Color of Fruit Fly
$X^R X^r$		
$X^R X^R$		
$X^r X^r$		
$X^r Y$		
$X^R Y$		

2. What are the possible genotypes of the fruit flies listed below?

- White eyed, male _____
- White eyed, female _____
- Red eyed, female _____
- Red eyed, male _____

3. Show a cross of a white eyed female ($X^r X^r$) and a red eyed male ($X^R Y$).

4. Show a cross between a pure breeding red eyed female and a white eyed male.

- What are the genotypes of the parents? _____ and _____
- Show the cross in the space below.

- What is the probability of the offspring being a white eyed male? _____
- What is the probability of the offspring being a white eyed female? _____
- What is the probability of the offspring being a red eyed male? _____
- What is the probability of the offspring being a red eyed female? _____

Name _____

Block _____

5. In humans, hemophilia is a sex-linked recessive trait. Females can be normal, carriers, or have the disease. Males will either have the disease or not (but they won't ever be carriers). Show a cross of a man who has hemophilia with a woman who is a carrier.

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- What is the probability that their children will have the disease? _____

6. A woman with hemophilia marries a normal man and wants to have children. Show the cross below.

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- What is the probability that their female children will have hemophilia? _____
- What is the probability that their male children will have hemophilia? _____

7. In humans, the alleles for normal color vision and red-green colorblind vision are found on the X chromosome. Normal color vision is dominant over red-green colorblind. Write the genotypes for each of the following phenotypes listed below.

- Female with normal vision that is not a carrier _____
- Female that is a carrier _____
- Female that is colorblind _____
- Male with normal vision _____
- Male that is colorblind _____

8. A woman with normal vision marries a man that is colorblind. They have three children, one daughter and two sons.

- What are the possible genotypes of the father?
- What are the possible genotypes of the mother?
- Show a cross for each of the possible combinations between the father & mother.

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- One son is colorblind and the other son & the daughter have normal vision. What are the actual genotypes of the parents? _____ and _____
- How do you know that these are the correct genotypes for the parents?